

What is claimed is:

1. A graphic engine that uses a validity test for verifying the validity of a drawing command in order to reduce the idle time of the graphic engine comprising:

5 a command queue;

a setup engine for receiving a drawing command transmitted from the command queue to perform the validity test;

a scan converter for receiving and processing the drawing command from the setup engine;

10 a display controller for providing the setup engine with the Y-coordinate of a current scan line; and

a validity test unit for verifying the validity of the drawing command when a back buffer is full and writing the primitive of the drawing command into a front buffer if the drawing command passes the validity test.

15 2. The graphic engine of claim 1, wherein the validity test unit is installed within the setup engine.

20 3. The graphic engine of claim 2, wherein the validity test unit compares the Y-coordinate of the current scan line with the maximum Y-coordinate of the primitive; if the Y-coordinate of the current scan line is greater than the maximum Y-coordinate of the primitive, then the drawing command passes the validity test.

25 4. The graphic engine of claim 1, wherein the validity test unit is installed

within an external memory controller.

5 5. The graphic engine of claim 4, wherein the validity test unit compares the memory address of the next primitive to be drawn with the memory address of the primitive which has been read in the front buffer, if the former is smaller than the latter, the drawing command passes the validity test.

6. A method for performing a validity test of a drawing command to reduce the idle time of a graphic engine comprising the steps of:

10 (a) reading a drawing command from a command queue;

(b) determining the primitive of the drawing command is to be written into a back buffer or a front buffer, if the primitive is to be written into a back buffer, the drawing command is executed, then go to step (a); otherwise, go to step (c);

15 (c) performing the validity test for the drawing command to determine whether a new primitive overlaps a primitive stored in the front buffer and not yet displayed; if overlap does not occur, the drawing command passes the validity test and is executed, then go to step (a); otherwise keeps on performing the validity test.

20 7. The method of claim 6, wherein step (c) comprises the steps of:

reading the Y-coordinate of a current scan line; and

25 comparing the Y-coordinate of the current scan line with the maximum Y-coordinate of the primitive to be drawn; if the Y-coordinate of the current scan line is greater than the maximum Y-coordinate of the primitive, the drawing command passes the validity test.

8. The method of claim 6, wherein step (c) comprises the steps of:

judging whether the memory region where the primitive of the drawing
command is to be written into overlaps the memory region occupied by another
5 primitive which has been written into the front buffer and not yet displayed.

1005559-012802